30

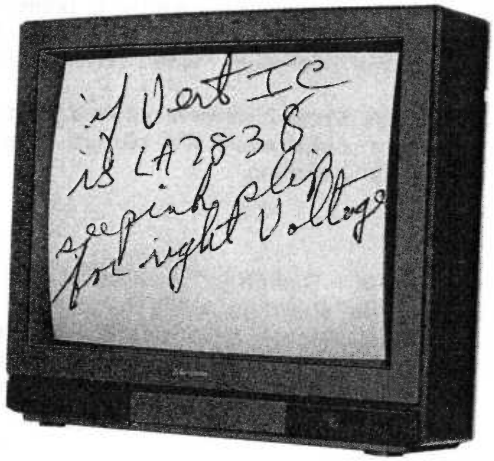
1989
TV-902

MITSUBISHI Service Manual

Retrace lines in pit
R552 + D552 off of pin 6 of fly 160 Vac

26" TABLE COLOR TV
UM2-B CHASSIS FAMILY

(407) 750-5292



short in set coil
Horiz windings in yoke

MODEL

CS-2610R
CS-2611R

CAUTION

Before servicing this chassis, it is important that the serviceman reads the " SAFETY PRECAUTIONS" and " PRODUCT SAFETY NOTICE" in this service manual.

SPECIFICATIONS

- **Power Input** AC 120V 60Hz
- **Power Consumption** 145W
- **Channel Coverage**
  VHF channels (2~13)
  UHF channels (14~69)
  CATV
  Mid – band channels (A – 1~A – 5, 5A, A~I)
  Super & Hyper – band channels (J~W, W + 1~W + 11)
  Hyper & Ultra – band channels (W + 12~W + 84)
- **Intermediate Frequency**
  Video IF Carrier 45.75MHz
  Sound IF Carrier 41.25MHz
  Color Sub – carrier 42.17MHz
- **Speaker** 3.1" Round type, 8 ohm, 2pcs.
- **Picture tube** A66AEK20X01
  26" V 110° Deflection
  * Picture high voltage.....28.9kV (at 0mA)
- **Semiconductors**
  IC..... 13
  Transistor..... 26
  FET..... 2
  Diode..... 52
  Positive Thermistor..... 1
- **Cabinet Dimensions** 22.7" (H) × 26.2" (W) × 18.5" (D)
- **Weight (Net)** 78.3lbs
- **Special Features**
  * New" UM – 2" chassis 100% solid state.
  * 10 key Frequency Synthesizer tuning system. (FS – 16)
  * Multichannel sound reception.
  * High quality audio.
  * 34 Function Infra – red Remote control.
  * Mid, Super, Hyper & Ultra band Cable – ready. (181ch).
  * CRT display.
  * S – VHS IN terminal.
  * Square picture tube.
  * Video IN/OUT terminal.
    Audio IN/OUT terminal (L/R).
  * CH Program.
  * CH Lock.
  * Quick Start Hi – Bi Focus, Inline Single Gun, Black Matrix Picture Tube.

368-4252

MITSUBISHI ELECTRIC SALES AMERICA, INC.
5757 Plaza Drive P.O. Box 6007 Cypress, California 90630-0007
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5430

SAFETY PRECAUTIONS

NOTICE : Observe all cautions and safety related notes located inside the receiver cabinet and on the receiver chassis.

WARNING

1. Operation of this receiver, outside the cabinet or with the cover removed, presents a shock hazard from the receiver power supplies. Work on the receiver should not be attempted by anyone who is not thoroughly familiar with the precautions necessary when working on high – voltage equipment.
2. Do not install, remove or handle the picture tube in any manner unless shatter – proof goggles are worn. People not so equipped should be kept away while the picture tube is being handled. Keep the picture tube away from the body while handling.

X – RADIATION WARNING

The surface of the picture tube may generate X – Radiation. Precaution during service and, if possible, the use of a lead apron is recommended for shielding while handling.

When replacing the picture tube, use only the designated replacement part since it is a critical component with regard to X – Radiation as noted above. (No high – voltage adjustments are provided.) The high – voltage specification is described on page 1.

LEAKAGE CURRENT CHECK

Before returning the receiver to the customer, it is recommended that leakage current be measured according to the following methods.

1. Cold Check

With the AC plug removed from the 120V AC source, place a jumper across the two AC plug prongs. Turn the receiver AC switch on. Using an ohm – meter, connect one lead to the AC plug and touch the other lead to each exposed metal part (antennas, handle bracket, metal cabinet, screwheads, metal overlays, control shafts, etc.), particularly any exposed metal part having a return path to the chassis. Exposed metal parts having a return path to the chassis should have a minimum resistance reading of 1 megohm. Any resistance below this value indicates an abnormality which requires corrective action. Exposed metal parts not having a return path to the chassis will indicate an open circuit.

2. Hot Check

Use the circuit in Fig. 1 to perform this test.

(1) With switch S1 open, connect the receiver to the measuring circuit. Immediately after connection, measure the leakage current using both positions of switch S2, and with the switching devices in the receiver in all of their operating positions.

(2) Switch S1 is then closed, energizing the receiver. Immediately after closing the switch,measure the leakage current using both positions of switch S2, and with the switching devices in the receiver in all of their operating positions.

Current measurements of items (1) and (2) are to be repeated after the receiver has reached thermal stabilization.

The leakage current shall not be more than 0.5 milliampere.

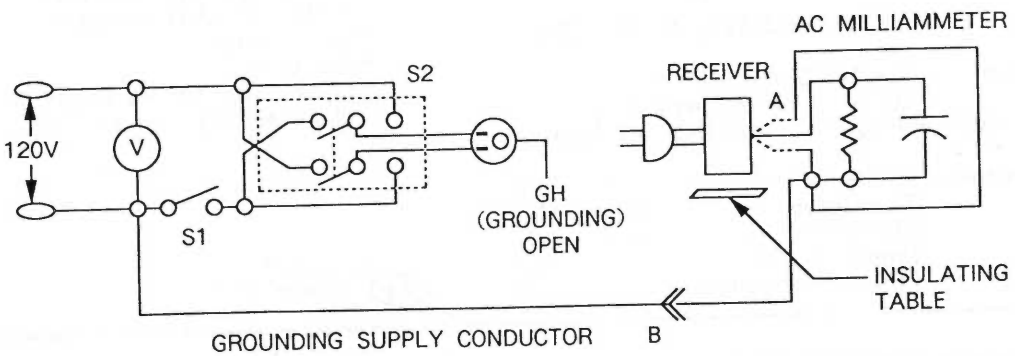


Fig. 1

PRODUCT SAFETY NOTICE

Many electrical and mechanical parts in television receivers have special safety related characteristics. These characteristics are often not evident from visual inspection nor can the protection afforded by them necessarily be obtained by using replacement components rated for higher voltage, wattage, etc. Replacement parts which have special safety characteristics are identified in this service manual.
Electrical components having such features are identified by shading on the schematic diagram and the parts list of this service manual and by marking on the supplementary sheet for this chassis to be issued subsequently. Therefore replacements for any safety parts should be identical in value and characteristics.

DISASSEMBLY PROCEDURES

REMOVAL OF PCBs

- **MAIN – PCB**
- **CRT – PCB**

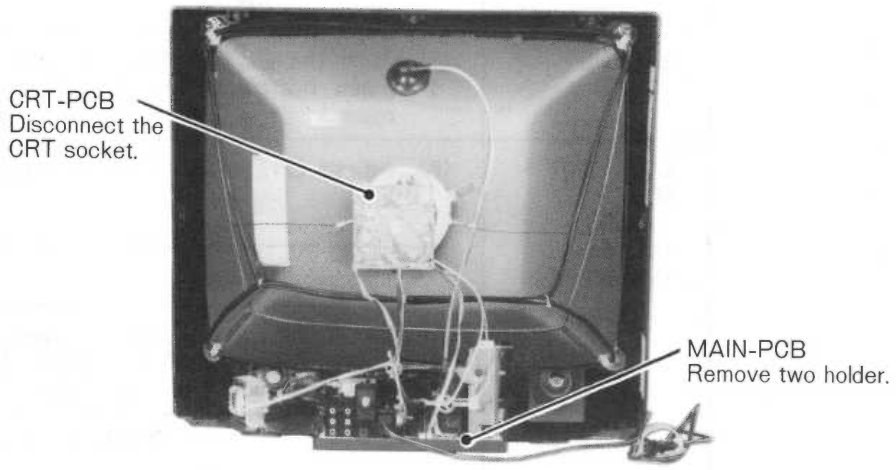


Fig. 2

COLOR TEMPERATURE

The entire color temperature adjustment procedure described below may be necessary when replacing the picture tube and/or the flyback transformer. In general servicing, the SCREEN step can be eliminated.

Preliminary adjustment

(1) Tune receiver to a B/W program. (If it is necessary to use a color program, ground the point C on MAIN – PCB as shown in Fig. A)
(2) Set CONTRAST control to maximum and BRIGHTNESS control to the reset position.
(Mid position as indicated on display.)
(3) Set each control as shown in TABLE 4 – 1.

	General servicing	Parts replacement
SCREEN	not necessary	fully counter – clockwise
CRT – CUT – OFFS	fully counter – clockwise	fully counter – clockwise
DRIVES	mechanical center	2/3 clockwise position

TABLE 4 – 1

(4) Disconnect the SERVICE SW [TP – EX] on MAIN – PCB. (See Fig. B)

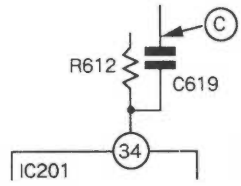


Fig. A

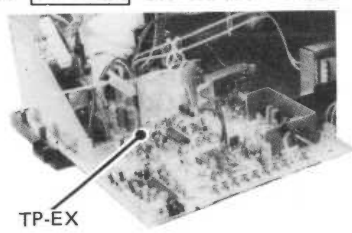


Fig. B

SCREEN

(5) Turn the SCREEN control clockwise until a red, blue or green horizontal line appears. (Do not adjust SCREEN again.)

CRT – CUT – OFF (VR653) (VR654) (VR655)

(6) Adjust CRT – CUT – OFF controls as shown in Table 4 – 2.

General servicing	Parts replacement
Turn CRT – CUT – OFF controls VR653, VR654 and VR655 to produce a white horizontal line.	Advance the rest of the CRT – CUT – OFF controls produce a white horizontal line.

TABLE 4 – 2

DRIVE (VR651) (VR652)

(7) Reconnect the SERVICE SW [TP – EX] to the MAIN – PCB.
(8) Adjust the red and blue DRIVE controls VR651 and VR652 to produce a white raster over the entire screen.

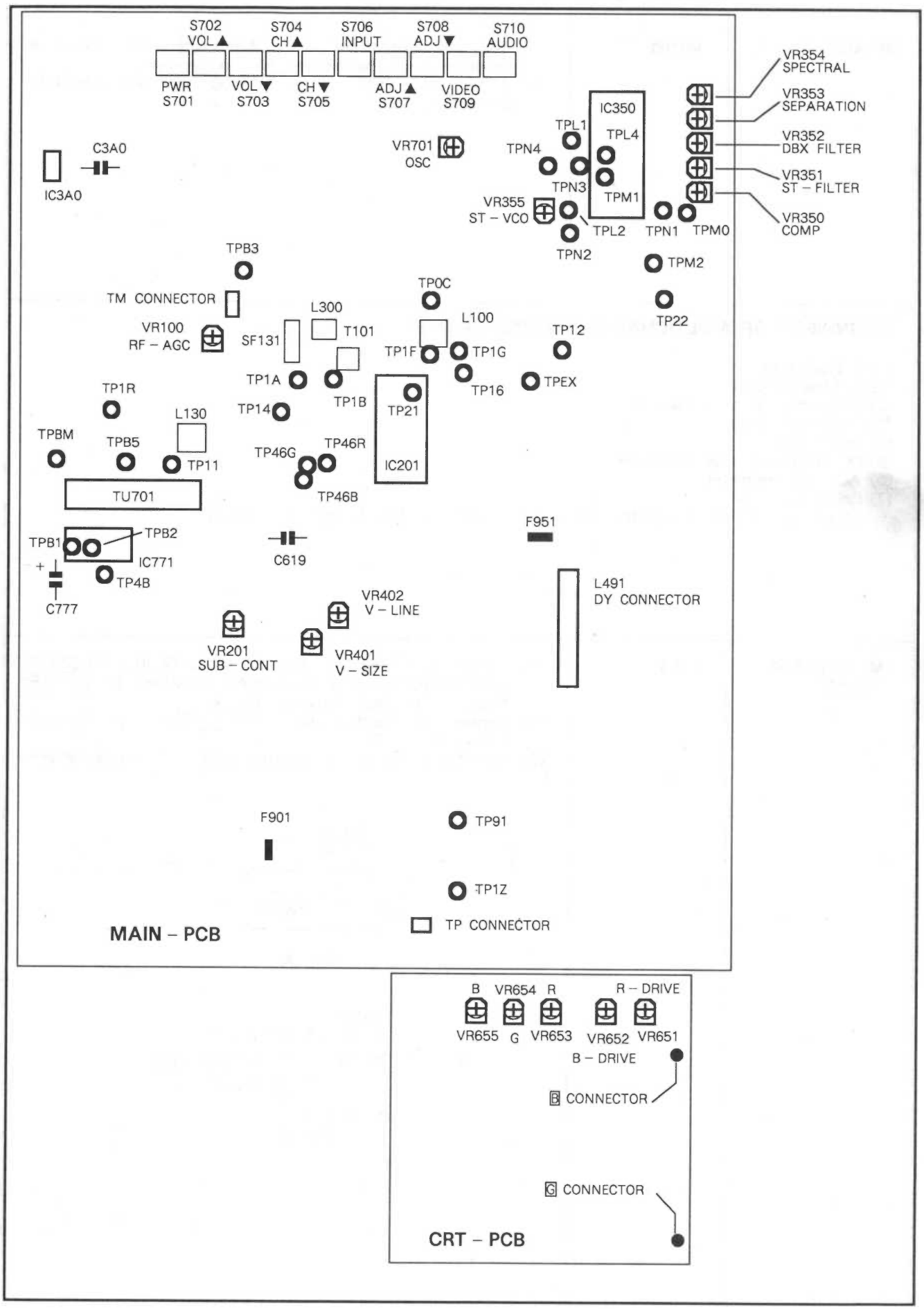
SUB – CONTRAST (VR201)

(9) Set a DC milliampmeter to the 3mA range. Connect the meters [–] lead to [TP – 1Z] ([TP] connecter pin②),connect the meters [+] lead to [TP – 91] ([TP] connector pin①).
(10) Adjust SUB – CONTRAST control for 1500 μA reading on the meter.

OVERALL

(11) Check overall black and white tracking throughout the normal brightness and contrast range. If necessary, repeat steps (4) and (6) thru (8). Accuracy of screen adjustment is important.

LOCATION OF TEST POINTS & ADJUSTMENTS MAIN – PCB (FOIL SIDE)



RF AGC	**VR100**	This adjustment should be done when there is cross modulation or the picture tears horizontally. (1) Adjust RF – AGC control, VR100 until the symptom disappears.

ALIGNMENT OF MULTICHANNEL SOUND CIRCUIT

1 – 1 Equipment

(1) 4.5MHz generator
(2) Sine wave signal generator
(3) Frequency counter
(4) Oscilloscope
(5) DC electronic tube voltmeter
(6) AC milli voltmeter
(7) Dc power supply
(Apply DC 20V to the both side of C3A0, and DC 12V to BM connector.)

FM DETECTOR CIRCUIT	**L300**	(1) Connect a 4.5MHz FM generator, set at 90dB μ (31.62mV) with 50KHz deviation modulated by 400Hz to TP – 1R through the pad shown in Fig. A. (2) Connect an Oscilloscope to TP – MO though the pad shown in Fig. B. (3) Adjust L300 for maximum amplitude of 400Hz waveform.

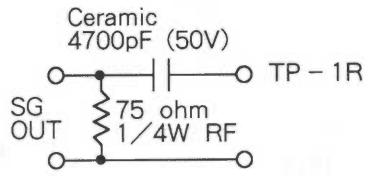


Fig. A

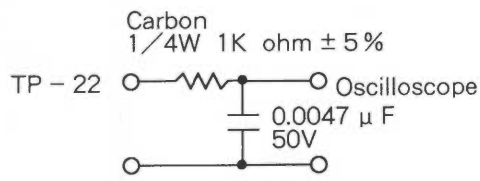
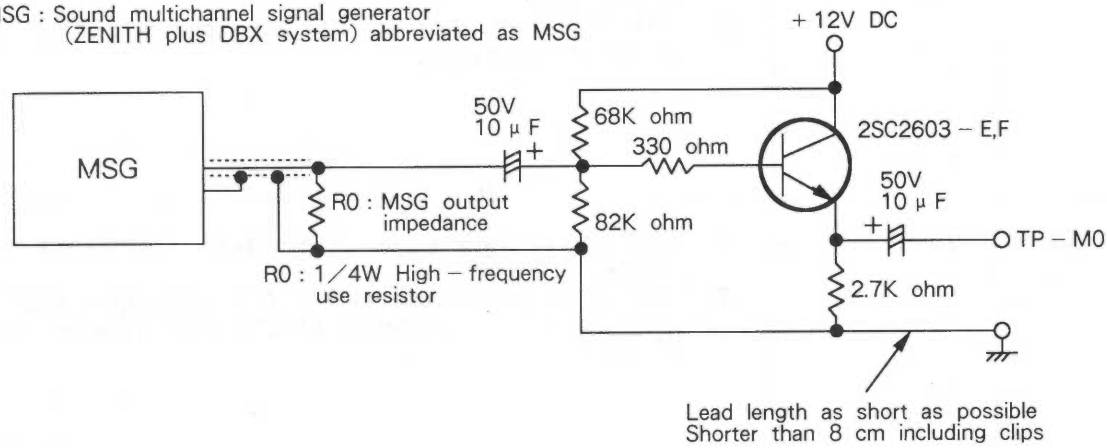


Fig. B

COMPOSITE LEVEL	**VR350**	(1) This adjusment should made after completing FM DET. CIRCUIT adjustment above. (2) Replace the oscilloscope with a milli voltmeter. (3) Adjust VR350 for 1.4Vp – p (0.5Vr.m.s.) of output level at TP – M0 . (4) After this adjustment the 12V DC supplied to TP – BM should be discharged.
STEREO FILTER	**VR351**	(1) Feed a sine wave signal of 62.94KHz, 150mVr.m.s. to testpoint TP – M0 . (2) Connect an oscilloscope to TP – N1 , and adjust VR351 for the minimum amplitude of 62.94KHz waveform on the scope.
SAP FILTER	**VR352**	(1) Short – circuit testpoints TP – N3 and TP – N4 . (2) Feed a sine wave signal of 15.73kHz, 50mVr.m.s. to testpoint TP – M0. (3) Connect an oscilloscope to TP – L4 , and adjust VR352 for the minimum amplitude of 15.73kHz waveform on the scope. (4) After the adjustment of VR352, remove the short – circuit from TP – N3 and TP – N4 .
STEREO VCO	**VR355**	(1) Short – circuit testpoints TP – L1 and TP – L2 to TP – N2. (2) Connect a Frequency counter to TP – M1 , and adjust VR355 for 15.75kHz. (3) After the adjustment of VR355, remove the short – circuit from TP – L1 , TP – L2 and TP – N2 .

The following alignment shall be perfomed while receiving a multichannel sound signal.

MSG : Sound multichannel signal generator
(ZENITH plus DBX system) abbreviated as MSG



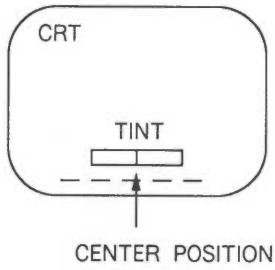
Note 1. The DC voltage at IC350 pin 29 should be less than 1.0V during the adjustment of SEPARATION and SPECTRAL.

Note 2. Multichannel sound signal for the adjustment may be either RF modulated or IF modulated signal based on following specification.

Contents : L – CHANNEL ONLY, NR – ON, Pilot – ON, SAP OUT – OFF, TELEMETRY OUT – OFF
300Hz – 11 dBm
3KHz – 11 dBm

Modulation rate : MONO, NR – OFF, Pilot – OFF, SAP OUT – OFF, TELEMETRY OUT – OFF
25KHz deviation at 300Hz
0 dBm
In case of IF modulated signal, use the pad shown in Fig. A (on page 6).

SEPARATION	**VR353**	This adjustment should be made after completing the TIMING adjustment (1) Connect an oscilloscope through the pad shown in Fig. B (page 6) to TP – M2 . (2) Adjust VR353 for the minimum amplitude of 300Hz waveform on scope.
SPECTRAL	**VR354**	This adjustment should be made after completing the SEPARATION adjustment above. (1) Adjust VR354 for minimum amplitude 3KHz waveform on the scope.

VERTICAL SIZE AND LINEARITY	**VR401** **VR402**	(1) Tune receiver to program. (2) Adjust HEIGHT control VR401 for approx. 90% vertical size. (3) Adjust V.LIN. control VR402 for picture symmetry. (4) Set CONTRAST to maximum and BRIGHTNESS control to the clickstop position. (Mid position as indicated on display) and adjust VR401 for normal vertical size.
FOCUS		(1) Set CONTRAST control to maximum and BRIGHTNESS control to the reset position (Max contrast and mid brightness as indicated on display.) (2) Adjust FOCUS control located at the F.B.T. for best overall definition and focus.
CHARACTER POSITION	**VR701**	(1) Adjust VR701 to position the center of the bar displaying TINT CONTROL to the center of the screen. 

VIDEO IF ALIGNMENT

1. TANK CIRCUIT ALIGNMENT

Test Equipment Connections (See Fig. 5 – 1)

- **Sweep generator** ····· Connect sweep output to testpoint TP – 1B (collector of Q130) on MAIN – PCB through sweep pad. (ground at HF shield case)
- **Marker generator** ····· Connect marker output to the sweep generator's MARKER IN or loosely couple to the sweep output cable.
- **Oscillscope** ····· Connect the EXT.H.IN terminal to the sweep generator's H. SCOPE terminal and the V.IN terminal to testpoint TP – 12 (emitter of Q101) on MAIN – PCB through the decoupling pad. (ground at HF shield case)
- **DC bias supply** ····· Apply 4 – 8V IF AGC bias to the testpoint TP – 14 (IC201 pin ⑩) on MAIN – PCB.

TABLE 5 – 1 – A

Terminal designation of the tuner	IF	PB	MB	LB	AGC	HB	TU	UB
Apply voltage (Tolerance ± 5 %)	–	–	* + 12V	–	0	* + 12V	+ 12V	–

* Apply voltage to the tuner terminals (MB, HB) following the procedure below.

(1) Apply 12V to TP – BM (C777 [+]) on MAIN – PCB.
(2) Apply 5V to each IC771 ②, ③ pins (TP – B1 , TP – B2) on the MAIN – PCB through 33k ohm resistor pad.
(3) Ground TP – B3 (IC771 ⑨ pin) on MAIN – PCB.
(4) Apply 29V to TP – B4 (IC771 ⑥ pin) on MAIN – PCB.

Note : Above supply should be discharged after this alignment.

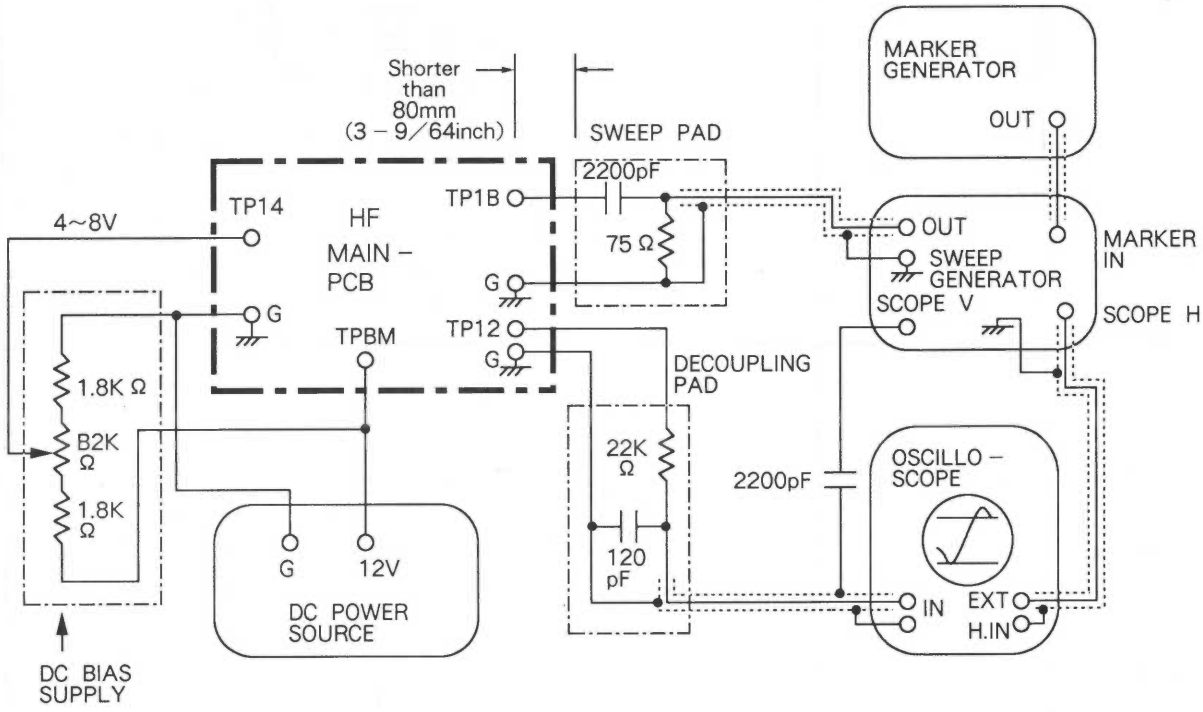
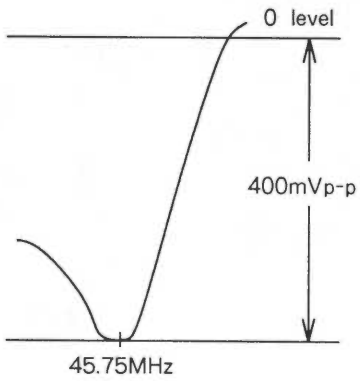


Fig. 5 – 1 Tank Circuit Alignment Connection

Procedure

(1) Make connections and refer TABLE 5 – 1 – A.
(2) Tune RF – AGC VR100 on MAIN – PCB to center position.
(3) Set oscilloscope sensitivity to 20mV/scale and sweep generator to 80dB (10mV) ± 5dB.
(4) Fine – tune sweep output so that a response waveform of 400mVp – p is displayed on the scope.
(5) Observing the response on the scope, proceed as per TABLE 5 – 1 – B.

TABLE 5 – 1 – B

Step	Maker Frequency	Adjust	Remarks	Response
1	45.75MHz	L100	Detune L100 out of the response band (toward higher frequency).	 Fig. A

AFT ALIGNMENT

Test Equipment Connections (See Fig. 5 – 2)

- **Sweep gnerator**····· Connect sweep output to testpoint TP – 1B on MAIN – PCB through the sweep pad.
- **Marker generator**····· Connect marker output to the sweep generator's MARKER IN or loosely couple to the sweep output cable.
- **Oscilloscope**····· Connect EXT.H.IN terminal to the sweep generator's H.SCOPE terminal and V.IN to the testpoint TP – 16 on MAIN – PCB through the decoupling pad.
- **Dc bias supplies**····· Apply 4 – 8V AGC bias to testpoint TP – 14 on MAIN – PCB.
- **Circuit tester or Vaccum tube voltmeter**····· Connect a circuit tester or eiectronic voltmeter to testpoint TP – OC (MT connector ① pin) on MAIN – PCB.

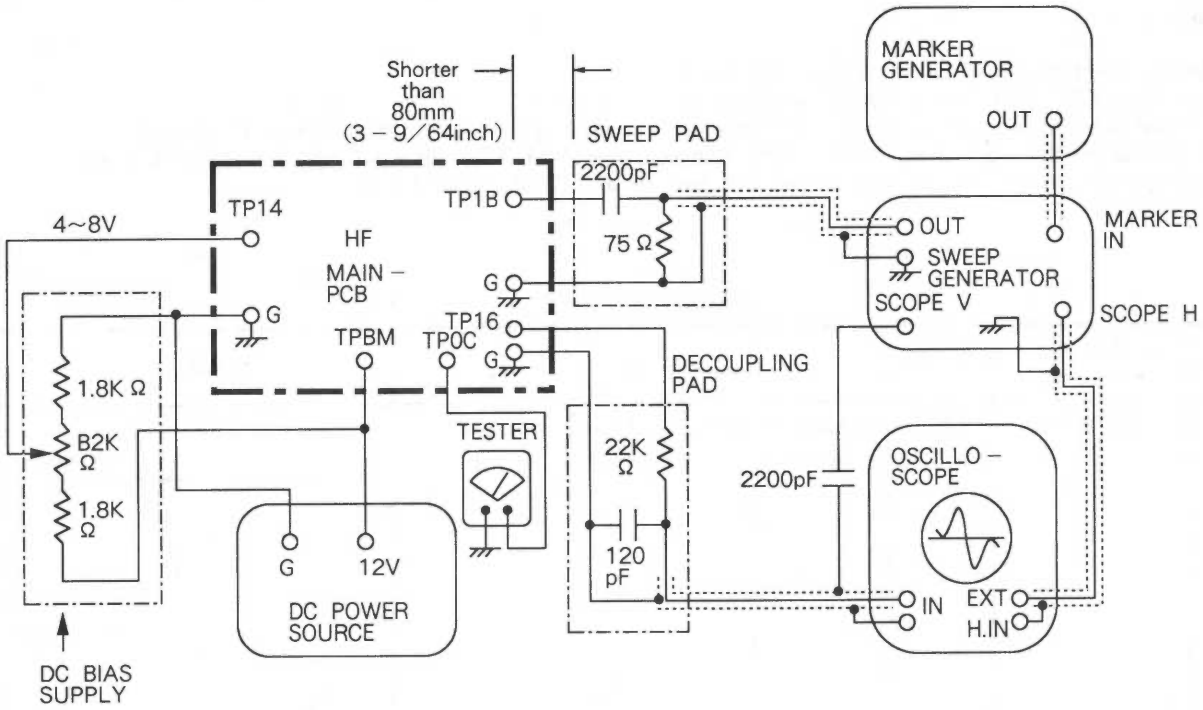
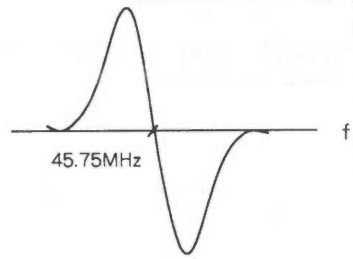


Fig. 5 – 2 AFT Circuit Alignment Connection

Procedure

(1) Make connections and refer to TABLE 5 – 1 – A.
(2) Set oscilloscope sensitivity to 1V/division.
(3) While observing the response on the scope, proceed as in TABLE 5 – 2.

TABLE 5 – 2

Step	Maker Frequency	Adjust	Remarks	Response
1	45.75MHz	L101	Connect an oscilloscope to testpoint TP – 1B as shown in F1g. 5 – 2. Set oscilloscpe sensitivity to 32mV/div.. Apply 20V to IC3A0 ① pin. Adjust L101 for 2.4V reading on the meter. Connect sweep output testpoint TP – 1B . Increase sweep output and make certain of the response as shown in Fig. B.	 **Fig. B**

VIF OVERALL ALIGNMENT

Test Equipment Connections (See Fig. 5 – 4)

- **Sweep generator**····· Connect sweep output to the TUNER testpoint [TP] through the sweep pad.
- **Marker generator**····· Connect marker output to the sweep generator's MARKER IN, or loosely couple to the sweep output cable.
- **Oscilloscope**····· Connect the EXT.H.IN terminal to the sweep generator's H. SCOPE terminal and the V.IN terminal to testpoint [TP – 12] (emitter of Q101) on MAIN – PCB through the decoupling pad. (ground at HF shield case)
- **DC bias supplies**····· Apply 4 – 8V AGC bias to testpoint [TP – 14] (IC201 ⑩ pin) on MAIN – PCB.
- **Resistor pad**····· Connect a 470 Ω resistor pad across testpoint [TP – 1F] and [TP – 1G] on MAIN – PCB.
- **Capacitor pad**····· Connect a 2200pF capacitor pad across SF131 pin① (IN), and pin③ (OUT).

Note : The supply at IC3A0 ① pin should be discharged before this alignment.

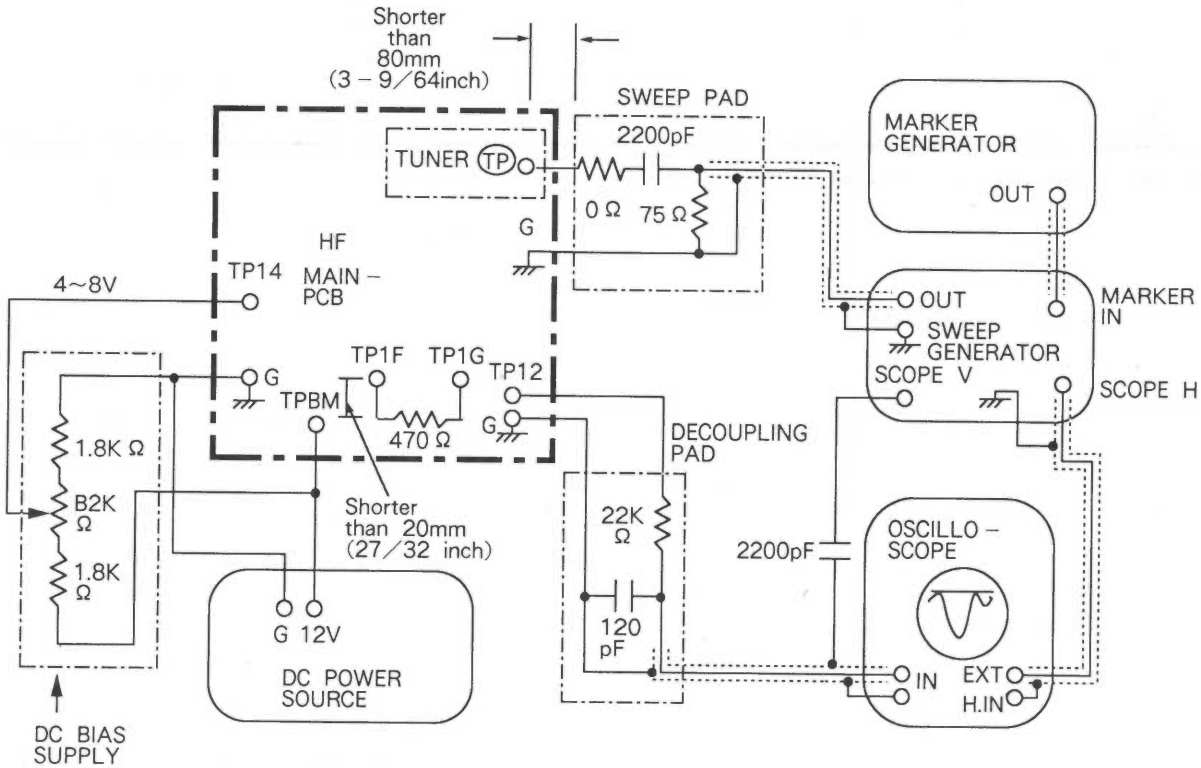
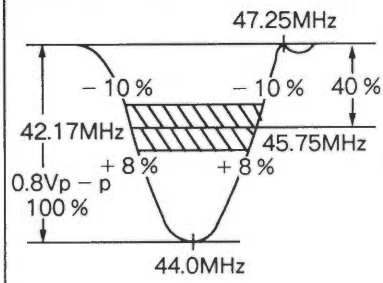


Fig. 5 – 4 VIF Overall Alignment Connection

Procedure

(1) Make connections and refer to TABLE 5 – 1 – A.
(2) Set oscilloscope sensitivity to 100m/division.
(3) Set sweep generator output to 80dB (10mV) ± 5dB.
(4) Adjust AGC bias at testpoint TP – 14 on SIGNAL – PCB so that the response amplitude is 0.8Vp – p on the scope.
(5) While observing the response, proceed as in TABLE 5 – 4.

TABLE 5 – 4

Step	Maker Frequency	Adjust	Remarks	Response
1	42.17MHz 44.00MHz 45.75MHz 47.25MHz	L130 T101	Adjust trap coil L130 for minimum at 47.25MHz. Remove the capacitor shorting SF131. Adjust T101 for maximum at 44.0MHz and for equal marker height of 40^{+8}_{-10} % with a symmetrical waveform. (If T101 is not adequete , adjust the TUNER IF coil .)	 Fig. C

※ After making the adustments, readjust RF – AGC (VR101).

FAST REFFERENCE PARTS LIST

CS – 2610R/CS – 2611R

SYMBOL #	DESCRIPTION	PARTS NUMBER
	Remote Transmitter (34 Function)	939P245030
	AC Power Cord	242C499040
	Door	702C759090
F901	☆6.3 Amp Fuse (Slow Acting)	283D060030
F951	☆1.0 Amp Fuse (Slow Acting)	283D076010
IC701	FS Microprocessor IC (M34350N6 – 566SP)	263P228040
IC771	Band switch IC (LA7911)	266P197010
IC951	Power Regulator (STR – D3030)	267P925010
K901	Power Relay	287P049020
Q551	Horizontal Output Transistor (2SD1878)	260P607010
R664	1.2 ohm K/J, 2 watt Fusible Resistor	103P438010
SP391,SP392	Speaker 3.1″ 8 ohm	480P013020
T551	Flyback Transformer	334P160020
T552	Horizontal Driver Transformer	336P012040
T991	Power Transformer	350P439010
TU701	Tuner	295P081010
V271	CRT (A66AEK20X01)	255P918010
VR401	Vertical Height Control	127C081010
VR402	Vertical Linearity Control	127C080080

☆ : Replace only with original manufacturer's part number.

PARTS LIST

In order to expedite delivery of replacement part orders.

Specify : 1. Model number/Serial number

2. Part number and Description

3. Quantity

Unless full information is supplied, delay in execution of orders will result.

○ : New Parts　　＊ : Warranty return items

RESISTOR

MARK	TOLERANCE
J	± 5 %
K	± 10 %
M	± 20 %
N	± 30 %

CAPACITOR

MARK	TOLERANCE
J	± 5 %
K	± 10 %
M	± 20 %
P	+ 100 % − 0 %

MARK	TOLERANCE
Z	+ 80 % − 20 %
C	± 0.25pF
D	± 0.5pF
F	± 1pF
Q	+ 30 % − 10 %

: Critical components

SYMBOL NO.	PARTS NO.	PARTS NAME	DESCRIPTION
		TUNER AND TUBES	
TU701	＊295P081010	TUNER	
	255P918010	CATHODE RAY TUBE	A66AEK20X01
		INTEGRATED CIRCUITS	
IC201	272P238010	IC	LA7655
IC202	272P184010	IC	LA7222
IC2A0	272P138010	IC	LA7952
IC330	272P188010	IC	LA7510
IC350	272P187010	IC	μPC1870CA-001-L
IC3A0	266P934020	IC	μPC7812H
IC3A1	272P139010	IC	LA7953
IC3A2	272P140010	IC	LA4270
IC401	272P239020	IC	LA7836
IC501	266P923020	IC	NJM78L09A
IC701	263P228040	IC	M34350N6-566SP
IC702	266P130030	IC	PST520E
IC771	266P197010	IC	LA7911
IC951	267P925010	IC	STR-D3030
		TRANSISTORS	
Q 101	260P419030	TRANSISTOR	2SC2724-D
Q 130	260P356010	TRANSISTOR	2SC1906
Q 201	260P255040	TRANSISTOR	2SA950-Y
Q 202	260P256010	TRANSISTOR	2SA1115-E, F
Q 203	260P256010	TRANSISTOR	2SA1115-E, F
Q 204	260P256010	TRANSISTOR	2SA1115-E, F
Q 3A0	260P338040	TRANSISTOR	2SC2603-E, F
Q 3A1	260P338040	TRANSISTOR	2SC2603-E, F
Q 502	260P469010	TRANSISTOR	2SA1321
Q 551	260P607010	TRANSISTOR	2SD1878
Q 552	260P325030	TRANSISTOR	2SC2655-Y
Q 593	260P256010	TRANSISTOR	2SA1115-E, F
Q 651	260P571010	TRANSISTOR	2SC3789-CD
Q 652	260P571010	TRANSISTOR	2SC3789-CD
Q 653	260P571010	TRANSISTOR	2SC3789-CD
Q 680	260P559010	TRANSISTOR	2SC1740S-Q
Q 681	260P559010	TRANSISTOR	2SC1740S-Q
Q 682	260P559010	TRANSISTOR	2SC1740S-Q
Q 702	260P338040	TRANSISTOR	2SC2603-E, F
Q 704	260P338040	TRANSISTOR	2SC2603-E, F
Q 705	260P338040	TRANSISTOR	2SC2603-E, F
Q 708	260P256010	TRANSISTOR	2SA1115-E, F
Q 709	260P256010	TRANSISTOR	2SA1115-E, F
Q 710	260P338050	TRANSISTOR	2SC2603-G
Q 711	260P560050	TRANSISTOR	2SA933S-Q
Q 712	260P338040	TRANSISTOR	2SC2603-E, F
Q 713	260P338040	TRANSISTOR	2SC2603-E, F
Q 714	260P338040	TRANSISTOR	2SC2603-E, F
Q 780	260P604010	TRANSISTOR	DTC124ES/UN4212
Q 901	260P338050	TRANSISTOR	2SC2603-G
		DIODES	
D 201	264P462020	DIODE	EQA02-07CD
D 202	264P462080	DIODE	EQA02-08CD
D 203	264P045040	DIODE	1S2471
D 205	264P045040	DIODE	1S2471
D 206	264P045040	DIODE	1S2471
D 208	264P045040	DIODE	1S2471
D 209	264P460090	DIODE	EQA02-05F/RD5.6EB1
D 210	264P045040	DIODE	1S2471
D 211	264P045040	DIODE	1S2471
D 212	264P045040	DIODE	1S2471
D 213	264P045040	DIODE	1S2471
D 3A0	264P512030	DIODE	RBV-401
D 3A2	264P045040	DIODE	1S2471
D 3A3	264P045040	DIODE	1S2471
D 3F0	264P045040	DIODE	1S2471
D 3F1	264P045040	DIODE	1S2471
D 401	264P460060	DIODE	EQA02-05C
D 410	264P463090	DIODE	EQA02-09D/RD10EB1
D 451	264P285010	DIODE	S5500D
D 490	264P045040	DIODE	1S2471
D 501	264P045040	DIODE	1S2471
D 502	264P045040	DIODE	1S2471
D 503	264P471010	DIODE	EQA02-33A/RD7.5EB1
D 506	264P045040	DIODE	1S2471
D 552	264P231010	DIODE	TVR1G
D 553	264P231010	DIODE	TVR1G
D 561	264P102020	DIODE	UF-2B/RU-3B
D 582	264P285010	DIODE	S5500D
D 590	264P231010	DIODE	TVR1G
D 593	264P285010	DIODE	S5500D

SYMBOL NO.	PARTS NO.	PARTS NAME	DESCRIPTION
D 594	264P285010	DIODE	S5500D
D 601	264P462020	DIODE	EQA02-07CD
D 651	264P501050	DIODE	HZ3BLL
D 710	264P045040	DIODE	1S2471
D 711	264P045040	DIODE	1S2471
D 712	264P045040	DIODE	1S2471
D 713	264P045040	DIODE	1S2471
D 715	264P045040	DIODE	1S2471
D 716	264P045040	DIODE	1S2471
D 717	264P045040	DIODE	1S2471
D 719	264P045040	DIODE	1S2471
D 720	264P045040	DIODE	1S2471
D 721	264P550010	LIGHT EMITTING DIODE	LN38GPL
D 722	264P341090	DIODE	HZ5B2
D 723	264P045040	DIODE	1S2471
D 730	264P045040	DIODE	1S2471
D 750	264P045040	DIODE	1S2471
D 751	264P045040	DIODE	1S2471
D 771	264P045040	DIODE	1S2471
D 772	264P045040	DIODE	1S2471
D 773	264P460060	DIODE	EQA02-05C
D 780	264P460040	DIODE	EQA02-05A
D 901	264P285010	DIODE	S5500D
D 953	264P512010	DIODE	RBV-408

OTHER SEMICONDUCTORS

RP901	265P071040	POSITIVE THERMISTOR	PTH451C42BF5R0M

FILTERS

BP330	296P067010	CERAMIC FILTER	SFS4.5MB2
CF100	296P024020	CERAMIC FILTER	TPS4.5MB7
CF501	299P051030	CERAMIC RESONATOR	
SF131	296P065020	SAW FILTER	
SF330	296P066010	SAW FILTER	SAF41MD70Z

DELAY LINES

DL201	337P096060	DELAY LINE	
DL202	337P110020	DELAY LINE	

COILS

L 100	323P172010	VIF	
L 101	323P171010	VIF	45.75MHZ
L 102	325C106030	PEAKING	10μH-J
L 130	320P026030	TRAP	
L 134	325C125000	PEAKING	0.82μH-M
L 137	325C110030	PEAKING	1.5μH-K
L 200	325C101020	PEAKING	8.2μH-K
L 201	325C101020	PEAKING	8.2μH-K
○ L 202	325C177050	PEAKING	100μH-J
L 300	327P073020	SIF	
L 331	325C110030	PEAKING	1.5μH-K
L 333	325C106060	PEAKING	18μH-J
L 340	325C100020	PEAKING	1.2μH-K
L 501	321C031090	RF	33μH-K
L 502	321C030010	RF	1μH-K
L 551	333P012090	H-LIN.	
L 554	411P001010	FERRITE LEAD	
L 651	325C107080	PEAKING	180μH-J
L 700	325C121030	PEAKING	10μH-K
L 710	325C101030	PEAKING	10μH-K
L 901	351P017010	LINE FILTER	
L 991	409B053090	DEGAUSSING	

TRANSFORMERS

BP601	349P159040	CHROMA-BP	
T 101	323P173010	VIF	
T 551	334P160020	FLYBACK	
T 552	336P012040	H. DRIVE	
T 991	350P439010	POWER	

VARIABLE RESISTORS

VR100	127C081010	VR-SEMIFIXED	1/5W B50KΩ-M
VR201	127C081010	VR-SEMIFIXED	1/5W B50KΩ-M
VR350	127C080070	VR-SEMIFIXED	1/5W B5KΩ-M
VR351	127C080080	VR-SEMIFIXED	1/5W B10KΩ-M
VR352	127C081010	VR-SEMIFIXED	1/5W B50KΩ-M
VR353	127C081020	VR-SEMIFIXED	1/5W B100KΩ-M
VR354	127C081020	VR-SEMIFIXED	1/5W B100KΩ-M
VR355	127C091010	VR-SEMIFIXED	1/5W B50KΩ-M
VR401	127C081010	VR-SEMIFIXED	1/5W B50KΩ-M
VR402	127C080080	VR-SEMIFIXED	1/5W B10KΩ-M
VR651	127C020010	VR-SEMIFIXED	1/5W B200Ω-N
VR652	127C020010	VR-SEMIFIXED	1/5W B200Ω-N
VR653	127C020070	VR-SEMIFIXED	1/5W B5KΩ-N
VR654	127C020070	VR-SEMIFIXED	1/5W B5KΩ-N
VR655	127C020070	VR-SEMIFIXED	1/5W B5KΩ-N
VR701	127C080070	VR-SEMIFIXED	1/5W B5KΩ-M

RESISTORS

R 515	103P378060	FUSE	1/4W 3.3Ω-J
R 555	109D055070	CEMENT WIRE	5W 3.9Ω-K
R 664	103P438010	FUSE METAL	2W 1.2Ω-K/J
R 719	103P543090	NETWORK	1/8W 15KΩ-JX4
R 724	109P054060	NETWORK	1/8W 10KΩ-JX5
R 957	109D067070	CEMENT WIRE	10W 2.7Ω-K

SYMBOL NO.	PARTS NO.	PARTS NAME	DESCRIPTION
		CAPACITORS AND TRIMMERS	
C 953	185D052040	ELECTROLYTIC-C	180V 820μF-Q
		SWITCHES	
S 701	432P066010	KEY BOARD SWITCH	1-1
S 702	432P066010	KEY BOARD SWITCH	1-1
S 703	432P066010	KEY BOARD SWITCH	1-1
S 704	432P066010	KEY BOARD SWITCH	1-1
S 705	432P066010	KEY BOARD SWITCH	1-1
S 706	432P066010	KEY BOARD SWITCH	1-1
S 707	432P066010	KEY BOARD SWITCH	1-1
S 708	432P066010	KEY BOARD SWITCH	1-1
S 709	432P066010	KEY BOARD SWITCH	1-1
S 710	432P066010	KEY BOARD SWITCH	1-1
		MISCELLANEOUS	
	449C081080	CRT SOCKET	
F 901	283D060030	FUSE	S6.3A
F 951	283D076010	FUSE	T1A
K 901	287P049020	POWER RELAY	
SP391	480P013020	SPEAKER	
SP392	480P013020	SPEAKER	
X 601	285P015010	CRYSTAL RESONATOR	HC-18/U 3.579545MHZ
X 701	285P029030	CRYSTAL RESONATOR	
Z 701	939P296040	REMOCON PREAMP UNIT	
		PRINTED CIRCUIT BOARD ASSY'S	
		★ CRT PCB ASSY	
		★ MAIN PCB ASSY	
		★ Not stoked items	
		MECHANICAL PARTS	
	669D221020	SCREW	SCREW-TB(10P)
	669D221060	SCREW	SCREW-TB(10P)
		COSMETIC PARTS	
	242C499040	AC POWER CORD	
○	700C094030	BACK COVER ASSY	[CS-2610R]
○	700C095070	BACK COVER ASSY	[CS-2611R]
○	701D063040	CABINET FRONT ASSY	[CS-2610R]
○	701B176020	CABINET FRONT ASSY	[CS-2611R]
	641D173010	CLIP	
	702C759090	DOOR	
PJ3A1	440A006010	TERMINAL BOARD	

SYMBOL NO.	PARTS NO.	PARTS NAME	DESCRIPTION
		PACKING PARTS AND ACCESSORY	
	803B620010	PACKING CUSHION	
	871C796090	INSTRUCTION BOOK	
	831C060030	PACKING BAG	
	831D191020	PACKING BAG	
○	802A044010	PACKING CASE	[CS-2610R]
○	802A044020	PACKING CASE	[CS-2611R]
	829D126020	PACKING SHEET	
○	871C360040	SERVICE MANUAL	
	*939P245030	REMOTE HAND UNIT	
		OTHER CRITICAL COMPONENTS	
C506	181P201040	C-ELECTROLYTIC	04W 10V 100μF-M
C551	189P071060	C-M-PLASTIC-PP	200V 0.43μF-J
C552	172P171040	C-M-PLASTIC-PP	1600V 0.012μF-J
C554	154P252000	C-CERAMIC	R2KV 1500PF-K
C583	181P118080	C-ELECTROLYTIC	04C 50V 10μF-M
C901	189P033050	C-M-MF/PP-AC	AC125V/250V 0.1μF-M
C910	189P133010	C-M-POLYESTER-AC	AC250V 0.01μF-M
C911	189P133010	C-M-POLYESTER-AC	AC250V 0.01μF-M
C954	142P014000	C-CERAMIC	E500V 2200PF-P
C955	189P060060	C-CERAMIC	E AC250V 2200PF-Z
C956	189P060060	C-CERAMIC	E AC250V 2200PF-Z
C957	181P189080	C-ELECTROLYTIC	04W 200V 47μF-M
C960	181P188060	C-ELECTROLYTIC	04W 160V 10μF-M
R111	103P410010	R-CARBON	1/4W 10Ω-J
R3C4	103P418040	R-CARBON	1/4W 2.2Ω-J
R3C5	103P418040	R-CARBON	1/4W 2.2Ω-J
R455	103P418040	R-CARBON	1/4W 2.2Ω-J
R507	103P464090	R-METAL	1/4W 10KΩ-F
R508	103P466030	R-METAL	1/4W 39KΩ-F
R510	103P463070	R-METAL	1/4W 3.3KΩ-F
R516	103P410010	R-CARBON	1/4W 10Ω-J
R517	103P410010	R-CARBON	1/4W 10Ω-J
R520	103P462080	R-METAL	1/4W 1.3KΩ-F
R551	103C171080	R-METAL	1W 270Ω-J
R556	103P414030	R-CARBON	1/4W 33KΩ-J
R557	103P414030	R-CARBON	1/4W 33KΩ-J
R558	103P338010	R-CARBON-25	1/4W 1.2Ω-J
R560	103P338010	R-CARBON-25	1/4W 1.2Ω-J
R561	103P338010	R-CARBON-25	1/4W 1.2Ω-J
R585	103P338010	R-CARBON-25	1/4W 1.2Ω-J
R590	103C192020	R-METAL	3W 560Ω-J
R910	109D036020	R-COMPOSITION	1/2W 4.7MΩ-K
R954	109D104010	R-CEMENT-WIRE	20W 150Ω-K/J
R956	101P824030	R-COMPOSITION	1/2W 820KΩ-K
R960	103P415050	R-CARBON	1/4W 330KΩ-J
R961	103C173080	R-METAL	1W 12KΩ-J
R962	103P412010	R-CARBON	1/4W 470Ω-J

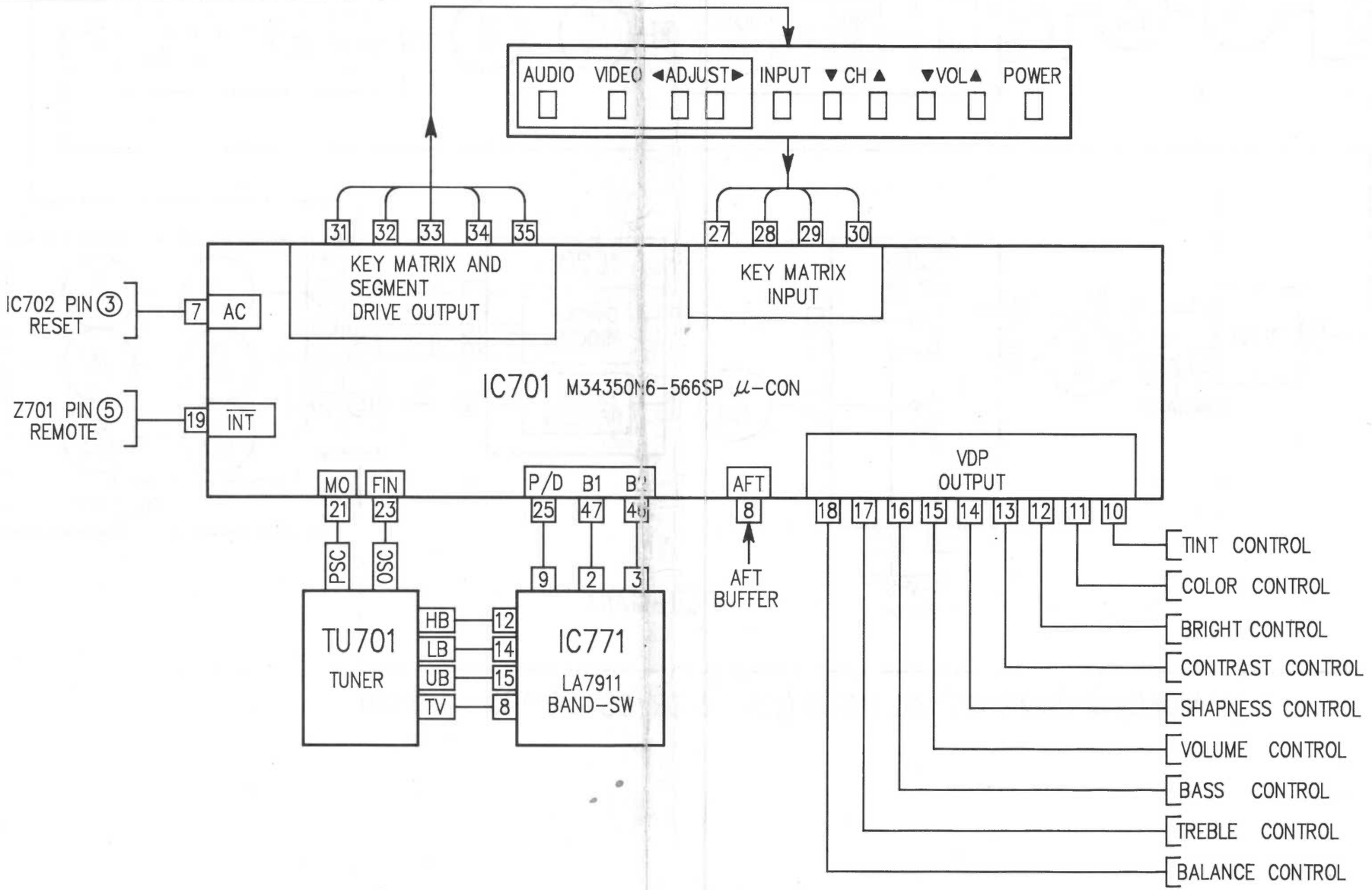
KEY MATRIX

IO PORT \ SCAN	Sa	Sb	Sc	Sd	Se
PIN (27) K1	ADJ ▲	CH ▲	POWER	—	—
PIN (28) K2	ADJ ▼	CH ▼	INPUT	—	—
PIN (29) K3	—	VOL ▲	AUDIO	—	—
PIN (30) K4	—	VOL ▼	VIDEO	—	—

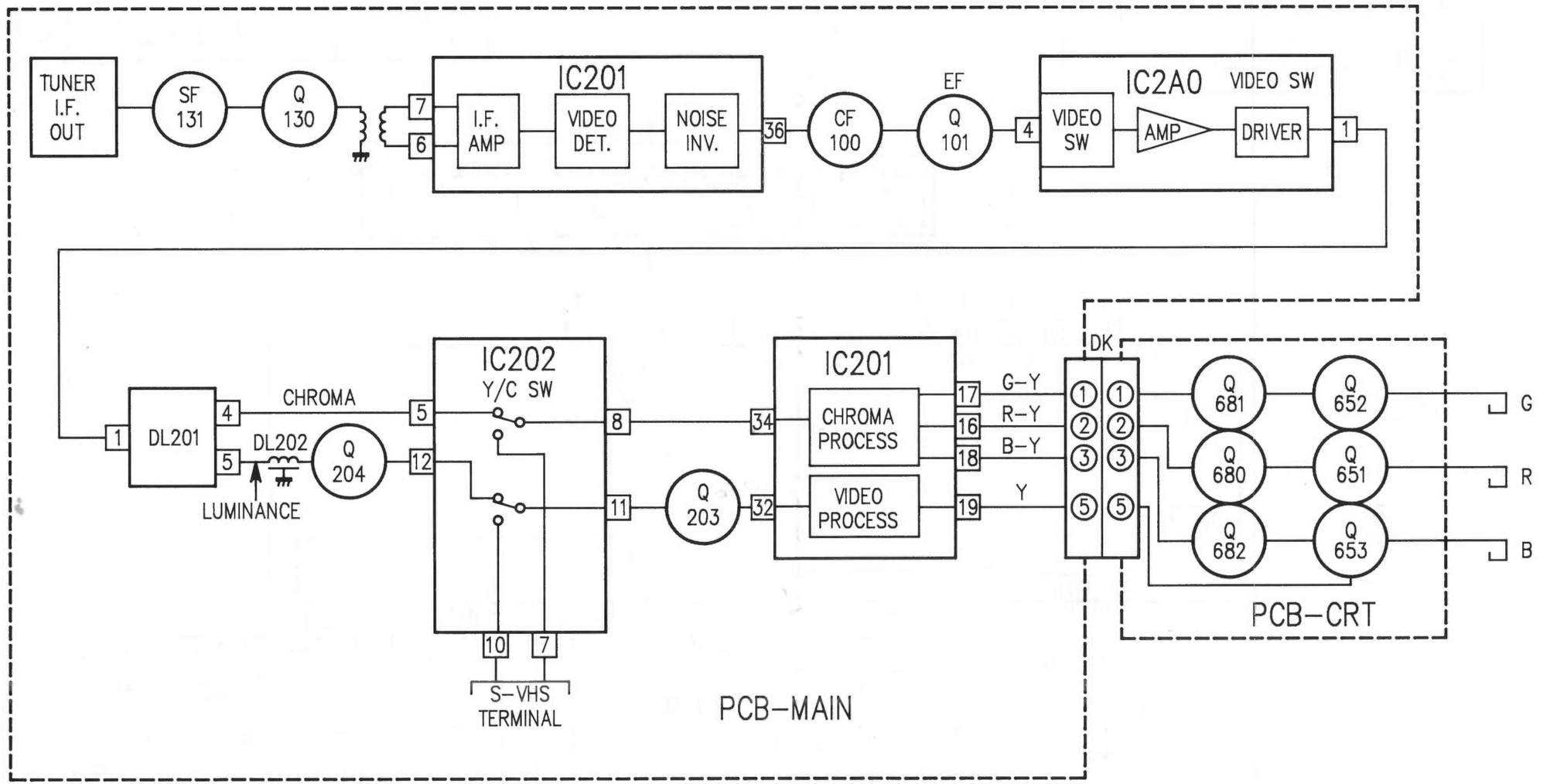
BAND SWITCHING TRUTH TABLE

SYMBOL NO.	IC701		IC771			TUNER		
	(47)	(46)	(15)	(14)	(12)	LB	HB	UB
UHF HYP/ULTRA	L	L	12V	Z	Z	0	0	12V
VHF-L /MID	L	H	Z	12V	Z	12V	0	0
MID/VHF-H SUP/HYP	H	H	Z	Z	12V	0	12V	0

Z: HIGH IMPEDANCE



MODEL CS-2610R/CS-2611R SIMPLIFIED FS-16 FUNCTIONAL BLOCK DIAGRAM (CS261004)



VIDEO/CHROMA SIGNAL PATH (CS-2610R/CS-2611R) (CS261003)

IC350

TUNER

SF 330

IC330

1 I.F. AMP

SOUND I.F. DETECTOR

6

39

IC201

SOUND I.F. DETECTOR

4

COMP LEVEL

2

L-R DECODER

SAP DECODER

L+R AMP

34 R-AMP

35 L-AMP

MATRIX

IC3A1

L AUDIO IN

1

3

5

25

R AUDIO IN

9

11

13

23

SWITCH CONTROL

4

6

2

CH 1

10

5

CH 2

7

SL

① ②

SP391 LEFT

SR

① ③

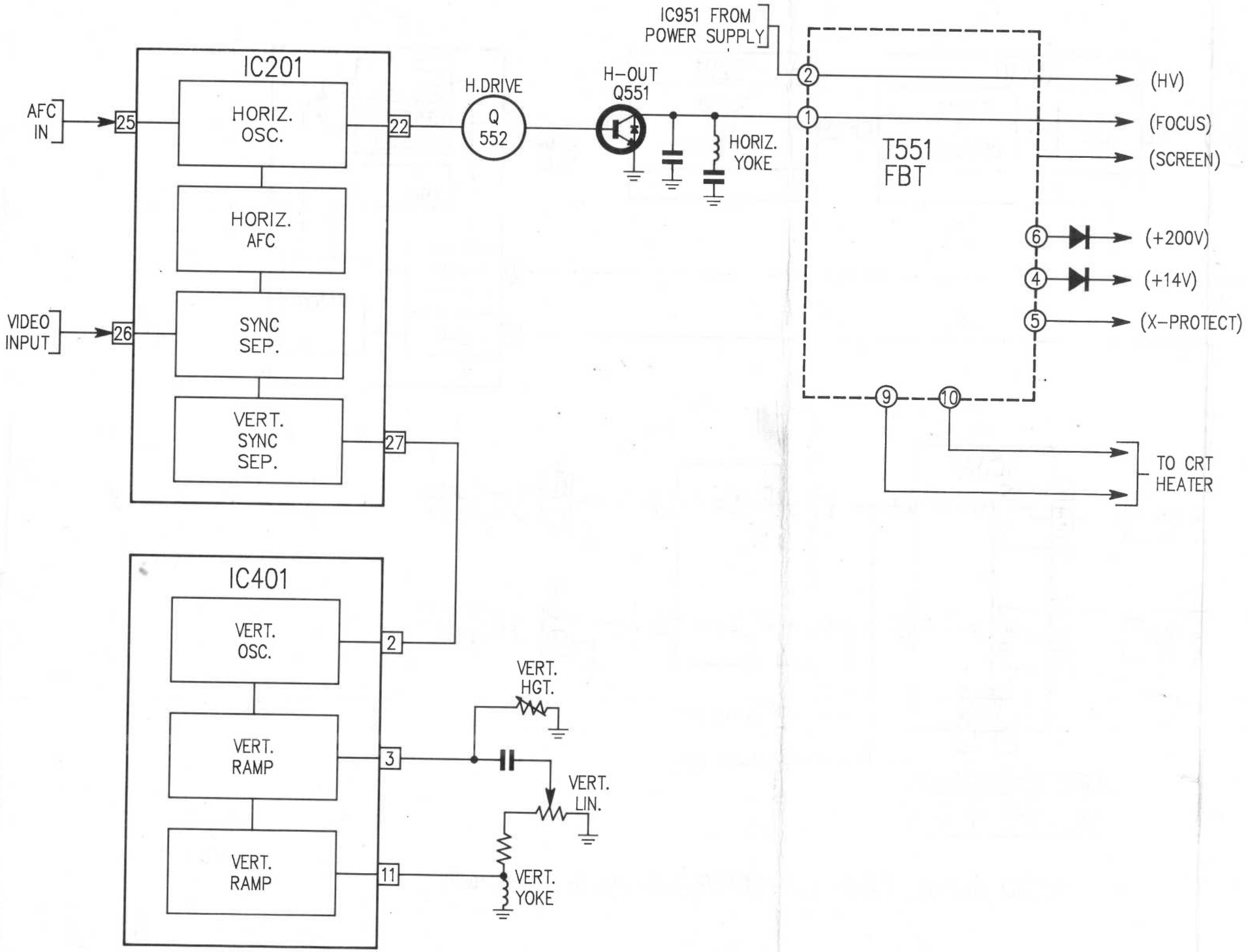
SP392 RIGHT

R AUDIO OUT

L AUDIO OUT

MODE	PIN ④	PIN ⑥
TV	H	H
AUDIO	L	H

AUDIO SIGNAL PATH (CS-2610R/CS-2611R) (CS261002)

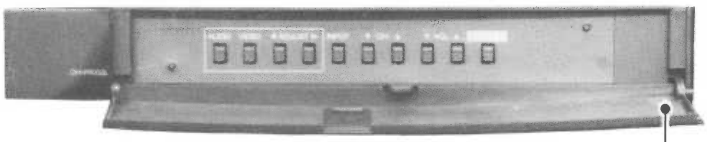


DEFLECTION CIRCUITRY (CS-2610R/CS-2611R) (CS261001)

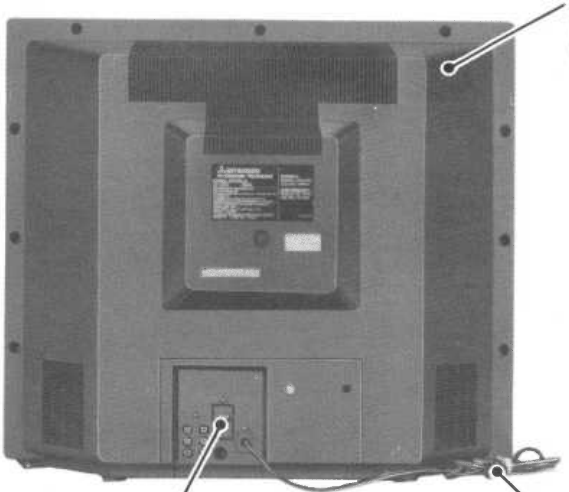
COSMETIC PARTS REFERENCE

CABINET FRONT ASSY
701D063040 [CS-2610R]
701B176020 [CS-2611R]

DOOR 702C759090



DOOR
702C759070



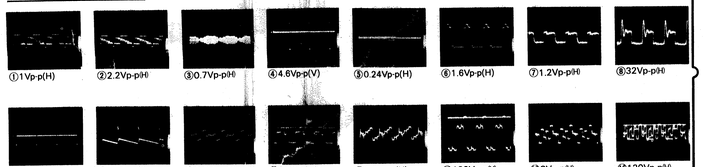
BACK COVER ASSY
700C094030 [CS-2610R]
700C095070 [CS-2611R]

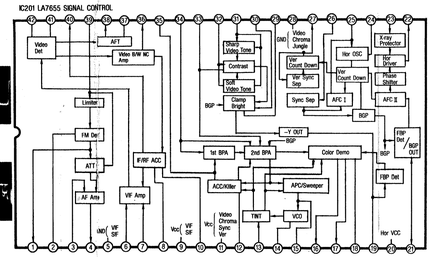
TERMINAL BOARD
440A006010

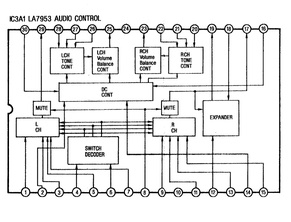
AC POWER CORD
242C499040

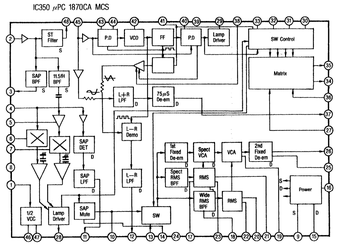
SCHEMATIC DIAGRAM
MODEL: CS-2610R/CS-2611R

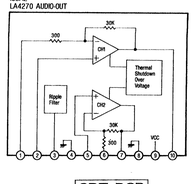
CHASSIS WAVEFORMS

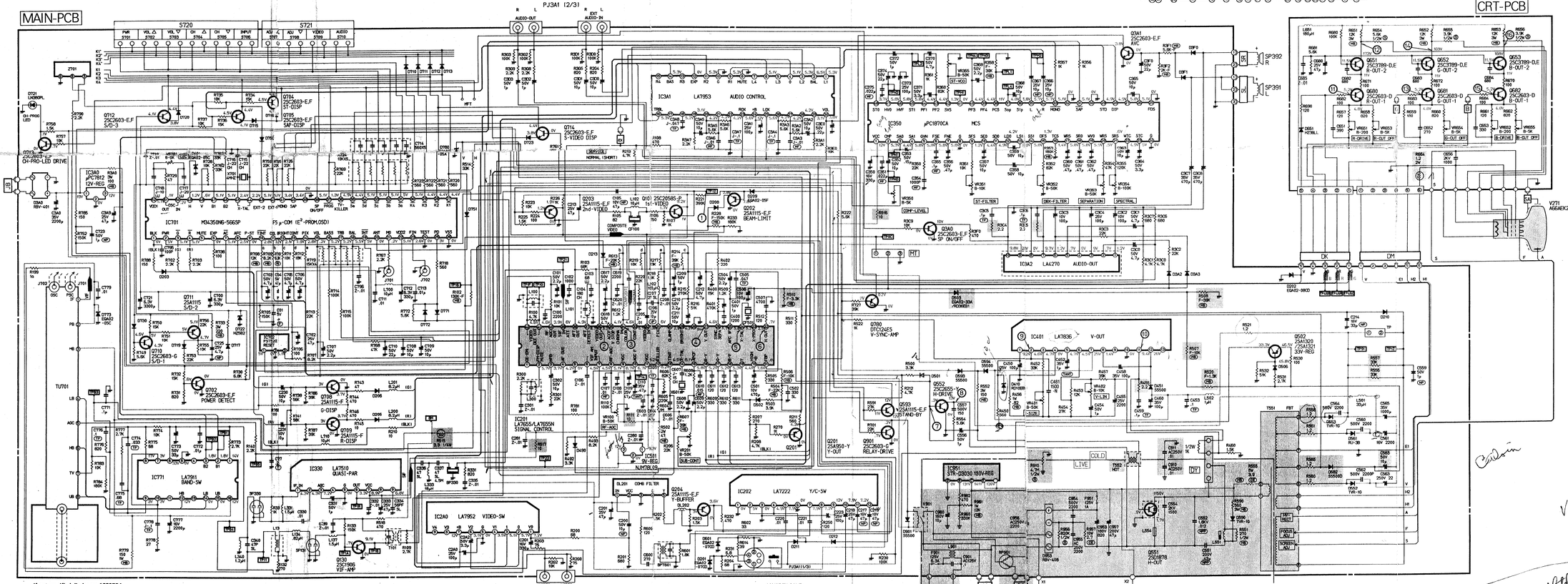











MAIN-PCB
CRT-PCB
PJ3A1 (2/3)
PJ3A1 (3/3)
S720
S721
IC701 M34350N6-566SP
IC3A0 μPC7812 12V-REG
IC3A1 LA7953 AUDIO CONTROL
IC350 μPC1870CA MCS
IC3A2 LA4270 AUDIO-OUT
IC201 LA7655/LA7655N SIGNAL CONTROL
IC330 LA7510 QUASI-PAR
IC771 LA7911 BAND-SW
IC2A0 LA7952 VIDEO-SW
IC202 LA7222 Y/C-SW
IC401 LA7836 V-OUT
IC951 STR-D3030 130V-REG
Q712 2SC2603-E,F S/D-3
Q714 2SC2603-E,F S-VIDEO DISP
Q784 2SC2603-E,F ST-DISP
Q785 2SC2603-E,F SAP-DISP
Q713 2SA1115-E,F CH-PRO-LED DRIVE
Q711 2SA1115-E,F S/D-2
Q710 2SC2603-G S/D-1
Q702 2SC2603-E,F POWER DETECT
Q709 2SA1115-E,F R-DISP
Q708 2SA1115-E,F G-DISP
Q707 2SA1115-E,F B-DISP
Q203 2SA1115-E,F 2nd-VIDEO
Q201 2SA1115-E,F BEAM-LIMIT
Q3A0 2SC2603-E,F SW ON/OFF
Q3A1 2SC2603-E,F
Q780 DTC124ES V-SYNC-AMP
Q502 2SA1320 2SA1321 93V-REG
Q552 2SC2655 H-DRIVE
Q593 2SA1115-E,F VERT-AMP-BY
Q901 2SC2603-G RELAY-DRIVE
Q551 2SD1878 H-OUT
Q951 2SD1878
Q330 2SC1906 VIF-AMP
Q2A1 2SA1115-E,F Y-BUFFER
Q2A2 2SA1115-E,F
Q2A3 2SA950-Y Y-OUT
Q2A4 2SA1115-E,F
Q2A5 2SA1115-E,F
Q2A6 2SA1115-E,F
Q2A7 2SA1115-E,F
Q2A8 2SA1115-E,F
Q2A9 2SA1115-E,F
Z701
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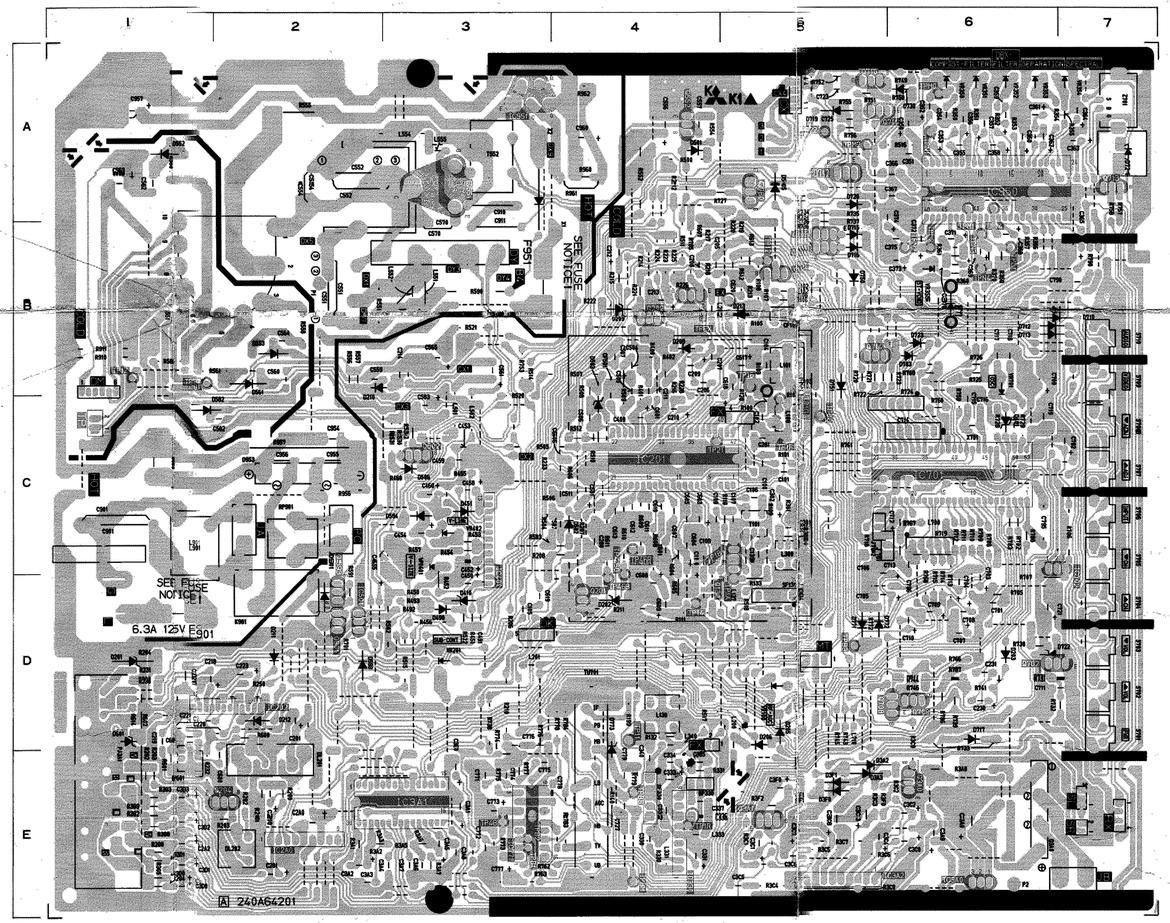


MAIN-PCB

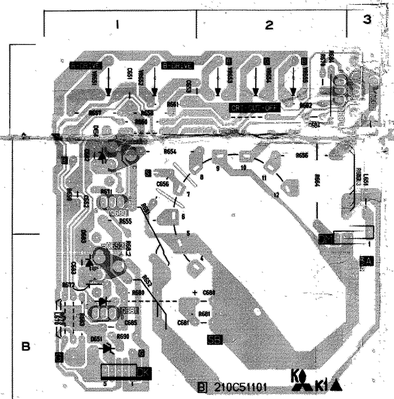
MAIN – PCB

SYMBOL NO.	ADDRESS
CF100	B-5
CF501	B-4
D201	D-1
D202	D-4
D203	D-6
D205	D-5
D206	D-5
D208	B-4
D209	B-4
D210	B-2
D211	D-2
D212	D-2
D213	B-5
D3A0	E-6
D3A2	E-6
D3A3	E-5
D3F0	E-5
D3F1	E-5
D401	C-6
D410	D-3
D451	C-3
D490	D-3
D501	A-4
D502	C-4
D503	B-4
D505	A-5
D506	C-3
D552	A-1
D553	B-2
D561	B-2
D582	C-2
D593	D-2
D594	C-3
D601	E-1
D703	B-6
D710	B-7
D711	B-7
D712	B-6
D713	B-6
D715	B-5
D716	B-5
D717	D-6
D719	A-5
D720	A-5
D721	A-7
D722	D-7
D723	B-6
D730	A-6
D750	B-5
D751	B-5
D771	D-5
D772	D-5

SYMBOL NO.	ADDRESS
D779	D-4
D901	C-2
D953	C-2
DL201	E-2
DL202	E-2
F901	D-1
F951	B-3
IC201	C-4
IC202	D-2
IC2A0	E-2
IC330	E-4
IC350	A-6
IC3A0	E-6
IC3A1	E-3
IC3A2	E-6
IC401	D-3
IC501	D-2
IC701	C-6
IC702	D-7
IC771	E-3
IC951	A-3
L100	C-5
L101	B-5
L102	B-5
L130	D-4
L134	D-5
L137	D-5
L200	D-5
L201	D-3
L202	B-4
L300	C-5
L331	E-4
L333	E-5
L340	D-4
L501	C-3
L502	C-3
L551	B-3
L552	B-3
L554	A-3
L555	A-3
L700	C-6
L710	D-5
L901	C-1
Q101	B-5
Q130	D-4
Q201	D-4
Q202	B-4
Q203	B-4

SYMBOL NO.	ADDRESS
Q204	E-2
Q3A0	E-6
Q3A1	E-5
Q502	C-3
Q551	A-3
Q552	A-4
Q693	C-2
Q702	D-6
Q704	B-5
Q705	B-5
Q708	D-5
Q709	D-6
Q710	A-5
Q711	A-6
Q712	A-5
Q713	A-7
Q714	B-5
Q780	A-5
Q781	D-2
TP	C-1
TP0C	C-5
TP11	D-4
TP12	B-5
TP14	D-4
TP16	B-5
TP1A	D-5
TP1B	C-5
TP1F	C-5
TP1G	C-5
TP1R	E-4
TP1Z	B-1
TP21	C-5
TP22	A-5
TP46B	D-4
TP46G	C-4
TP46R	C-4
TP4B	E-3
TP91	B-1
TPB1	E-3
TPB2	E-3
TPB3	D-5
TPB5	E-4
TPBM	E-4
TPEX	B-4
TPL1	B-6
TPL2	B-6
TPL4	A-6
TPM0	A-6
TPM1	A-6
TPM2	A-5
TPN1	A-6
TPN2	B-6

SYMBOL NO.	ADDRESS
TPN3	B-6
TPN4	B-6
VR100	D-5
VR201	D-3
VR350	A-6
VR351	A-6
VR352	A-6
VR353	A-6
VR354	A-7
VR355	B-6
VR401	C-3
VR402	C-3
VR701	B-6
X601	C-4
X701	C-6



CRT-PCB

CRT – PCB

SYMBOL NO.	ADDRESS
D651	B-1
D682	A-1
D683	B-1
L651	A-3
	B-1
Q651	A-1
Q652	B-1
Q653	A-3
Q680	A-1
Q681	B-1
Q682	A-2
VR651	A-1
VR652	A-1
VR653	A-2
VR654	A-2
VR655	A-2

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